## REMARKS

After entry of the present Amendment, claims 1, 4-8, 16-19, 26, 28, 30-34, 37, 39-40, 45 and 47-57 (four independent claims; thirty dependent claims) remain pending in the application. In the November 29, 2001, Office Action, the Examiner indicated that claim 26 defined patentable subject matter, but objected to the claim on formal grounds. The Drawings, Abstract and Specification were objected to and the remaining claims were rejected. Applicants have amended the Drawings, Abstract and Specification as requested by the Examiner. Applicants have also canceled claims 2, 3, 12-15, 20-25, 27, 29, 35, 36, 38, 41-44 and 46, without disclaimer or prejudice, amended claims 1, 4-8, 16-19, 26, 28, 30-34, 37, 39 and 45, and presented new claims 47-57 for consideration. Applicants respectfully request reexamination and reconsideration.

Formal Drawings

Applicants have provided formal drawings as requested. Applicants apologize for any lack of clarity of the originally filed informal drawings.

Claim Objections

Claims 2,12 and 44 stand objected to because of various informalities. Applicants have canceled claims 2, 12 and 44 without prejudice or disclaimer.

Claim 45 stands objected to because of the following informality: "'further' should appear before 'comprising' on the first line of the claim." Applicants have amended claim 45 to add "further" before "comprising' on the first line of the claim.

Claim Rejections Under 35 U.S.C. § 112

Claim 35 stands rejected under 35 U.S.C. § 112, first paragraph. Applicants have canceled claim 35 without disclaimer or prejudice.

Claims 4, 6, 8, 9, 10-26, 28, 30, 31, 33, 35 and 43 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicants have canceled claims 12-15, 20-25, 35 and 43 without disclaimer or prejudice.

Applicants have amended claim 4 to depend from claim 1 and to substitute "the piezoelectric film" for "the polymer," so that claim 1 now properly introduces "a piezoelectric film." Applicants have also amended claim 8 to substitute "the mechanical signals" for "the signals." Claim 7 includes "mechanical signals."

The Office Action rejects claims 28 and 33 because the trademark/trade name MEDEVAC is contained in the third line or claim 28 and the first line of claim 33. The Office Action further rejects claim 28 because there is insufficient antecedent basis for the limitation "the substrate" in the first line of the claim. Applicants have amended claims 28 and 33 to eliminate "MEDEVAC" from both claims and to substitute "a support" and "the support" for "the substrate".

As the rejected claims have been amended in accordance with the Examiner's recommendations, Applicants respectfully submit that claims 4, 6, 8, 9, 10, 11, 16-19, 26, 28, 30, 31 and 33 satisfy the requirements of 35 U.S.C. § 112. Applicants respectfully request reconsideration of those claims.

Claim Rejections Under 35 U.S.C. § 101

Claims 1-36 stand rejected under 35 U.S.C. § 101 "because the claimed invention is directed to non-statutory subject matter." Applicants have amended claims 1, 18, 19, 30 and 31 to eliminate all references to "a body " and "the body". Independent claims 1 and 26 have been further amended to introduce "a patient" in their claim preambles as a descriptive term. Therefore, claims 1 and 26 do not positively claim "a patient". Claims 18 and 19 (which depend from claim 1) and claims 30 and 31 (which depend from claim 26) refer to "the patient". Therefore, Applicants respectfully submit that claims 1-36 satisfy the requirements of 35 U.S.C. § 101.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-9, 13-15, 18, 27, 28, 32, 36, 37-41, 44 and 46 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Snyder et al., U.S. Patent No. 4,686,999, issued August 18, 1987 (hereinafter "Snyder"). Applicants respectfully traverse this rejection.

Applicants' amended independent claim 1 includes, "a processor communicating with the converter for isolating physiological digital signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data." Applicants' independent claim 26 includes, "plural sensors... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise." Applicants' independent claim 37 includes, "isolating the physiological digital signals from the environmental digital signals by subtracting environmental signals sensed by the second sensor from the signals sensed by the first sensor."

Among other elements, Snyder does not describe "a processor communicating with the converter for isolating physiological digital signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data," as in claim 1. Snyder also does not describe "plural sensors ... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise," as in claim 26. Finally, Snyder does not describe "isolating the physiological digital signals from the environmental digital signals by subtracting environmental signals sensed by the second sensor from the signals sensed by the first sensor," as in claim 37. For the above reasons, Applicants submit that claims 1, 26 and 37 are not anticipated by Snyder.

Support for the amendments to claims 1, 26 and 37 may be found in the originally filed Specification at pages 17 and 18, as well as in other areas of the Specification. No new matter has been introduced.

Claims 1, 2, 27, 32, 36-38 and 47 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Zanetti et al., U.S. Patent No. 4,989,611, issued February 5, 1991 (hereinafter "Zanetti"). Applicants respectfully traverse this rejection.

As is the case with Snyder, Zanetti does not describe "a processor communicating with the converter for isolating physiological digital signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data," as in claim 1. Zanetti also does not describe "plural sensors

... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise," as in claim 26. Finally, Zanetti does not describe "isolating the physiological digital signals from the environmental digital signals by subtracting environmental signals sensed by the second sensor from the signals sensed by the first sensor," as in claim 37. Thus, Applicants submit that claims 1, 26 and 37 are not anticipated by Zanetti.

Claims 1, 2, 27, 32, 36-38 and 47 stand rejected under 35 U.S.C. § 102(b) as being anticipated by McQuilkin, U.S. Patent No. 5,241,964, issued September 7, 1993 (hereinafter "McQuilkin"). Applicants respectfully traverse this rejection.

Again, as with Snyder and Zanetti, McQuilkin does not describe "a processor communicating with the converter for isolating physiological digital signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data," as in claim 1. McQuilkin also does not describe "plural sensors ... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise," as in claim 26. Finally, McQuilkin does not describe "isolating the physiological digital signals from the environmental digital signals by subtracting environmental signals sensed by the second sensor from the signals sensed by the first sensor," as in claim 37. Thus, Applicants submit that claims 1, 26 and 37 are not anticipated by McQuilkin.

For the above reasons, Applicants respectfully request the withdrawal of all rejections of independent claims 1 and 37 under 35 U.S.C. § 102(b). Applicants also request withdrawal of all rejections of claims 4-9, 16-19, 28, 32, 39 and 40, all of which properly depend from claims 1, 26 or 37 and are still pending in the present application.

Claim Rejections Under 35 U.S.C. § 103(a)

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Snyder in view of Crawford. Applicants have canceled claim 12 without prejudice or disclaimer.

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Snyder in view of Scanlon, U.S. Patent No. 5,684,460, issued November 4, 1997 (hereinafter "Scanlon"). As a preliminary matter, Applicants submit that even if the proposed combination were made, the invention of claims 10 and 11 would not be obtained. Specifically, neither Snyder nor Scanlon disclose or suggest "a processor communicating with the converter for isolating physiological digital signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data," as in claim 1, from which claims 10 and 11 depend. Furthermore, Applicants submit that neither Snyder nor Scanlon contain any suggestion or motivation to combine the references as cited proposed in the Office Action.

Claims 19, 20, 25 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Trimmer et al., U.S. Patent No. 4,245,648, issued January 20, 1981 (hereinafter "Trimmer"), in view of Crawford, GB 2166871A, published May 14, 1986 (hereinafter "Crawford"). Applicants have canceled claims 20 and 25 without disclaimer or prejudice. Regarding claims 19 and 31, Applicants again submit that even if the proposed combination were made, the invention of claims 19 and 31 would not be obtained. Specifically, neither Trimmer nor Crawford disclose or suggest "a processor communicating with the converter for isolating physiological digital signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data," as in claim 1, from which claim 19 depends. Trimmer and Crawford also do not disclose or suggest "plural sensors ... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise," as in claim 26, from which claim 31 depends. Furthermore, Applicants submit that neither Trimmer nor Crawford contain any suggestion or motivation to combine the references as cited proposed in the Office Action.

Claims 21-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Trimmer in view of Crawford and further in view of Zomer and Isaacson et al. Applicants have canceled claims 21-23 without prejudice or disclaimer.

Claim 24 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Trimmer in view of Crawford, Zomer, and Isaacson et al., and further in view of McQuilkin. Applicants have canceled claim 24 without prejudice or disclaimer.

Claims 25, 30 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McQuilkin in view of Crawford. Applicants have canceled claim 25 without prejudice or disclaimer. Regarding claims 30 and 31, Applicants again submit that even if the proposed combination were made, the invention of claims 30 and 31 would not be obtained. Specifically, neither McQuilkin nor Crawford disclose or suggest "plural sensors ... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise," as in claim 26, from which claims 30 and 31 depend. Furthermore, Applicants submit that neither McQuilkin nor Crawford contain any suggestion or motivation to combine the references as cited proposed in the Office Action.

Claim 29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Snyder in view of Scanlon. Applicants have canceled claim 29 without prejudice or disclaimer.

Claims 33 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Snyder. In particular, the Examiner stated, "It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the sensors of Snyder into a litter." Applicants submit that even if the proposed incorporation were made, the invention of claims 33 and 34 would not be obtained. Specifically, Snyder does disclose or suggest "plural sensors ... wherein the plural sensors consist of pairs of sensors for sensing the sensed data from the patient and for separately sensing ambient noise," as in claim 26, from which claims 33 and 34 depend. Furthermore, it would not have been obvious to one of ordinary skill in the art at the time of invention to include such "plural sensors".

For the foregoing reasons, Applicants respectfully request that all rejections of claims 10, 11, 19, 30, 31, 33 and 34 based on 35 U.S.C. § 103 be withdrawn.

Allowable Subject Matter

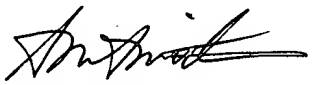
The Office Actions states, "Claim 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims." Applicants have rewritten claim 26 as suggested by the Examiner and have additionally rewritten claim 26 to eliminate any reference to "a body", as objected to by the Examiner under 35 U.S.C. § 101. No new matter has been added to claim 26 by these amendments.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT

Passive Physiological monitoring apparatus and method have [has] a sensor for sensing physiological phenomenon. A converter converts sensed data into electrical signals and a computer receives and computes the signals, and outputs computed data for real-time interactive display. The sensor is a piezoelectric film of polyvinylidene fluoride. A band-pass filter filters out noise and isolates the signals to reflect data from the body. A pre-amplifier amplifies signals. Signals detected include mechanical, thermal and acoustic signatures reflecting cardiac output, cardiac function, internal bleeding, respiratory, pulse, apnea, and temperature. A pad may incorporate the PVDF film and may be fluid-filled. The film converts mechanical energy into analog voltage signals. Analog signals are fed through the band-pass filter and the amplifier. A converter converts the analog signals to digital signals. A Fourier transform routine is used to transform into the frequency domain. A microcomputer is used for recording, analyzing and displaying data for on-line assessment and for providing realtime response. A radio-frequency filter may be connected to a cable and the film for transferring signals from the film through the cable. The sensor may be an array provided in a MEDEVAC litter or other device for measuring acoustic and hydraulic signals from the body of a patient for field monitoring, hospital monitoring, transport monitoring, home, remote monitoring.

IN THE SPECIFICATION:

Please amend the specification as follows:

Page 1, line 7; page 4, line 24; page 11, line 9; page 13, line 22; page 18. line 14; page 24, line 5; page 26, line 24; page 27, line 11; please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

Page 17, line 26, please change "LabVIEW™" to --"LABVIEW™ laboratory view--.

Page 1, line 7, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

Minimization of the time between injury occurrence and transport to the appropriate level of medical care is necessary to ensure that wounded and sick soldiers obtain the prompt medical attention essential for their survival. During that time, aeromedical care in a MEDEVAC™ medical evacuation [MEDEVAC] helicopter environment is used to identify and transport casualties.

Page 4, line 24, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

A primary mission of military nurses is to ensure that wounded and sick soldiers obtain prompt medical attention and/or evacuation to definitive medical care. The actions performed during the time period between a battlefield injury and the transfer of casualties to appropriate medical treatment is critical for the welfare of the soldier, and can be the difference between life and death. It is during this critical time period where diagnosis and treatment begins and also when evacuation – for example via MEDEVAC™ medical evacuation [MEDEVAC] helicopter – occurs.

Page 11, line 9, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

The sensor pad is preferable placed directly beneath the back of a patient lying supine on a MEDEVAC™ medical evacuation [MEDEVAC] litter. The mechanical/acoustic signals created by cardio-pulmonary function are transmitted through the body onto the passive sensor, which converts the signal into an analog voltage. An illustration of the existing P2M setup is shown in Figure 6. Among the major hardware used for the laboratory setup are: desktop computer, a multi-function programmable charge amplifier and roll-around rack to encase all of the hardware. To maintain versatility for initial research and development, most of the equipment were chosen for functionality at the expense of space efficiency.

Page 13, line 22, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

Figure 14 shows schematic view of the Passive Physiological Monitoring (P2M) System Using a passive sensor array and microelectronics incorporated into a MEDEVAC™ medical evacuation [MEDEVAC] litter.

Page 18. line 14, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

For protection and east of transport, the entire P2M system 19 is encased in a metal technical enclosure 21 with casters (not shown) and locking glass door (not shown), as shown in Figure 2. The equipment also includes a MEDEVAC™ medical evacuation [MEDEVAC] stretcher 23 on which the sensor is mounted. This device may be incorporated into a litter to eliminate the need for patient attachment or miniaturized as a portable field device in a purse with a wireless communication setup.

Page 24, line 5, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

Testing of the P2M system for pulse and respiration in a high noise and vibration environment was performed at Wheeler Army Air Field, on March 5, 1999. Tests were performed during static display of a MEDEVAC™ medical evacuation [MEDEVAC] helicopter. The main purpose of the test was to characterize the high noise/vibration environment using P2M, microphones and accelerometers. Results showed that through filtering and signal analyses, the P2M was able to discern physiological signals from the high amplitude and frequency noise caused by the helicopter to output accurately pulse and respiration. No conventional methods were performed at this test due to the high-noise environment, which would render those methods useless.

Page 26, line 24; please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

Passive monitoring of such parameters as cardiac output, cardiac function, and internal bleeding are within the scope of this invention. The invention uniquely provides a device that is passive (completely non-invasive), unobtrusive, and autonomous; i.e., the apparatus in no way interferes either with the patient's mobility or with other monitoring equipment, and is capable of functioning with a minimum of technical expertise. In addition, the equipment functions reliably in high-noise environments and other situations that render alternative and existing methods ineffective. These environments include, but are not limited to, medical evacuation (MEDEVAC™ medical evacuation [MEDEVAC]) by helicopter or ambulance, and operation through Military Orientated Protective Posture (MOPP) gear and body armor.

Page 27, line 11, please change "MEDEVAC" to --MEDEVAC™ medical evacuation--.

The invention may be incorporated into a wide range of applications apart from the MEDEVAC™ medical evacuation [MEDEVAC] litter. The passive sensor array may be configured without much change to operate on a hospital bed or an ordinary mattress used at home. Of particular note is the area of premature infant care. In this case, the attachment of sensor leads to the infant may often be difficult, causing irritation of sensitive skin and entanglement in leads. The sensor may be incorporated into equipment for use in both civilian and military sectors. The sensor may be incorporated into field equipment, clothes and uniforms. This includes, but is not limited to, cervical collars, body armor, biological and/or chemical hazard protection suits, extraction devices, clothes, cushions and seats and seatbacks. Exercise equipment, such as stationary bicycles, treadmills or steppers may benefit by incorporated sensors into the supports.

Page 17, line 26, please change "LabVIEW™" to --"LABVIEW™ laboratory view--.

For system operation, a master program 17 combines the three separate software modules of data acquisition/control, signal processing/analysis, and data

display/user interface. The LABVIEW™ laboratory view [LabVIEW™] "G" graphical programming language was used for all three subroutine programs. The analog voltage signal is digitized and analyzed in time and frequency domains. Routines developed for signal conditioning and analysis include digital filtering, spectral analysis, auto correlation, and noise-rejection programs. The data is displayed real-time in either Monitor or Acquisition mode. Monitor mode displays the current data and discards old readings as new updates are processed, while Acquisition mode saves data for future analysis. The voluminous data must not exceed the disk-storage capacity of the computer in Acquisition mode.

IN THE CLAIMS

1. (Amended) An apparatus for passively monitoring physiology of a patient, the [Passive physiological monitoring] apparatus comprising:

at least two [one] sensors, each comprising a piezoelectric film, for sensing physiological signals from the patient and environmental signals from an environment around the patient; [data by placing the at least one sensor on a body,];

a converter communicating with the at least two [one] sensors for converting the physiological and environmental signals [sensed data] into digital signals[,];

a processor [computing device] communicating with the converter for isolating [receiving and computing the] physiological digital [voltage] signals from the digital signals by comparing the digital signals between the at least two sensors to provide physiological data [and for outputting computed data,]; and

a monitor [instrumentation] communicating with the processor [computing device] for displaying the physiological data in [for] real-time [interaction with the device and for display of the computed data].

Please cancel claims 2 and 3.

4. (Amended) The apparatus of claim 1 [2], wherein the piezoelectric film comprises a [polymer is] polyvinylidene fluoride (PVDF) film.

5. (Amended) The apparatus of claim 1, further comprising at least one band-pass filter coupled with the at least two sensors for filtering out at least one of the environmental signals [noise and isolating to reflect data from the body].

6. (Amended) The apparatus of claim 5 [4], further comprising a pre-amplifier coupled with the band-pass filter for pre-amplifying at least one of the physiological and environmental signals.

7. (Amended) The apparatus of claim 1, where the physiological and environmental signals are [data sensed is] selected from a group consisting of mechanical, thermal and acoustic signals.

8. (Amended) The apparatus of claim 1 [7], wherein the physiological and environmental signals indicate [include] cardiac output, cardiac function, internal bleeding, respiratory, pulse, apnea, temperature signals and combinations thereof.

Please cancel claims 12-15.

16. (Amended) The apparatus of claim 1 [15], wherein the processor further compris[ing]es a frequency Fourier transform for transforming the physiological digital signals [data] into frequency data [domain].

17. (Amended) The apparatus of claim 16, further comprising a microcomputer for recording, analyzing and displaying the frequency data to enable [for] on-line assessment of the frequency data and [for providing] real-time response to the frequency data.

18. (Amended) The apparatus of claim 1 [4], wherein the piezoelectric film is positioned under the patient [body] at various locations.

19. (Amended) The apparatus of claim 1 [4], wherein the piezoelectric film is positioned on the patient [body] as a wrapped cuff.

Please cancel claims 20-25

26. (Amended) A passive physiological monitoring apparatus for monitoring physiology of a patient comprising: [The apparatus of claim 25,]

plural sensors for sensing data by placing the plural sensors on the patient, each of the plural sensors comprising a piezoelectric film, the piezoelectric film comprising a polymer for sensing data from the body and converting the sensed data into voltage measurements, the polymer comprising polyvinylidene fluoride (PVDF), wherein the plural sensors consist of pairs of sensors for sensing [signals] the sensed data from the patient [body] and for separately sensing ambient noise;

a converter communicating with the each of the plural sensors for converting the sensed data into signals;

a computing device communicating with the converter for receiving and computing the signals and for outputting computed data; and

instrumentation communicating with the computing device for real-time interaction with the device and for display of the computed data.

Please cancel claim 27.

28. (Amended) The apparatus of claim 26 [1], wherein at least one of the plural sensors is disposed on a [the] substrate [is] selected from a group consisting of an item of clothing[es], a stretcher[s], a bed[s], a [MEDEVAC] litter[s], a cervical collar[s], body armor, body protection gear, a uniform[s], an extraction device[s], exercise equipment, furniture, a cushion[s], a seat[s] and a seatback[s].

Please cancel claim 29

30. (Amended) The apparatus of claim 26 [25], wherein the plural sensors are configured to measure pulse-wave velocity at plural locations on the patient.

31. (Amended) The apparatus of claim 26 [25], wherein the plural sensors are configured to measure pulse-wave travel time at plural locations on the patient.

32. (Amended) The apparatus of claim 1, wherein the at least two [one] sensors comprise [is] an array of sensors distributed over different locations for measuring and monitoring the sensed data from [signals of] the patient [body].

33. (Amended) The apparatus of claim 32, further comprising a [MEDEVAC] litter incorporating the array of sensors for measuring acoustic and hydraulic signals from the [body of a] patient, when the patient is positioned on the litter, and from surrounding areas.

34. (Amended) The apparatus of claim 33, wherein the acoustic and hydraulic signals comprise physiological signals from the patient [body] and environmental signals from the surrounding areas [noise].

Please cancel claim 35 and 36.

37. (Amended) A method for passively monitoring physiology of a patient, the [Passive physiological monitoring] method comprising:

placing a first piezoelectric sensor in contact with [on] the patient [a body,];

placing a second piezoelectric sensor in a location near to but not in contact with the patient;

sensing physiological signals and environmental signals [data from the body] with the first sensor and environmental signals with the second sensor;[,]

converting the physiological and environmental signals into physiological and environmental digital **[data with a converter into]** signals;**[,]**

isolating the physiological digital signals from the **[body from ambient]** environmental digital signals by subtracting environmental signals sensed by the second sensor from the signals sensed by the first sensor; **[computing the isolated signals, outputting computed data];[,]** and

displaying the physiological digital signals **[computed data on instrumentation]**.

Please cancel claim 38.

39. (Amended) The method of claim 37, further comprising filtering out the environmental signals **[noise]** with a band-pass filter **[for separating the signals from the body]**.

Please cancel claim 41-44.

45. (Amended) The method of claim 37, further comprising:

placing a third sensor on the patient, at a location remote from the first sensor; and

measuring a pulse-wave velocity with the first and third sensors **[at plural locations on the body with the sensor]**.

Please cancel claim 46.

--47. (New) An apparatus as in claim 1, wherein the at least two sensors comprise at least three sensors, two sensors contacting the patient at different locations and one sensor in an environment around the patient but not in contact with the patient.

48. (New) An apparatus as in claim 47, wherein the processor compares physiological signals and environmental signals sensed by the two sensors and environmental signals sensed by the one sensor, so as to isolate the physiological signals.

49. (New) An apparatus as in claim 1, wherein a first sensor is disposed at a first location and a second sensor is disposed at a second location, and wherein the processor determines a pulse-wave velocity in response to a physiological signal time difference between the first sensor and the second sensor.

50. (New) An apparatus as in claim 49, wherein the processor calculates blood pressure data in response to the pulse-wave velocity.

51. (New) A method as in claim 45, further comprising converting the pulse-wave velocity into systolic and diastolic blood pressure data and displaying the blood pressure data.

52. (New) A method as in claim 37, further comprising:

engaging a third sensor with the patient, at a location remote from the first sensor;

comparing physiological and environmental signals from the first and third sensors; and

using the comparison to reduce environmental signals and amplify physiological signals.

53. (New) A method as in claim 37, further comprising:

engaging a third sensor with the patient, at a location remote from the first sensor; and

measuring a pulse-wave travel time between the first sensor and the third sensor.

54. (New) A method as in claim 53, further comprising converting the pulse-wave travel time into systolic and diastolic blood pressure data and displaying the blood pressure data.

55. (New) A method as in claim 37, wherein the sensing step includes sensing the physiological signals through one or more layers of clothing, bullet proof armor, or a combination thereof.

56. (New) A method for passively monitoring physiology of a patient, the method comprising:

engaging a first piezoelectric sensor with the patient;

engaging a second third piezoelectric sensor in a location near to but not in contact with the patient;

sensing physiological signals and environmental signals with the first sensor and environmental signals with the second sensor;[,]

isolating the physiological signals from the [body from ambient] environmental signals by subtracting environmental signals sensed by the second sensor from the signals sensed by the first sensor; and

displaying the physiological digital signals.

57. (New) A method as in claim 56, further comprising:

engaging a third piezoelectric sensor with the patient, at a location remote from the first sensor;

sensing physiological signals and environmental signals with the third sensor; and

comparing the physiological and environmental signals from the first sensor with the physiological and environmental signals from the third sensor to determine locations of the first and second sensors on the patient.—